UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,361	06/23/2003	Junichi Kitagawa	03378/LH	1137

1933 7590 04/11/2005

FRISHAUF, HOLTZ, GOODMAN & CHICK, PC
767 THIRD AVENUE
25TH FLOOR
NEW YORK, NY 10017-2023

EXAMINER	
POLYZOS, FAYE S	

ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 04/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/602,361	KITAGAWA, JUNICHI	
	Examiner	Art Unit	
	Faye Polyzos	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/23/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figure 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 7-10 and 13-18 are rejected under 35 U.S.C. 102(b) as being anticipated by *Engelhardt et al (US 2002/0030884 A1).*

Regarding claim 1, Engelhardt discloses a laser scanning microscope which scans a laser beam on a sample (1) by a scanning optical system in a scanning optical system main body to detect a fluorescence or reflected light from the sample (1), wherein a light source section comprising a light source manufactured by a semiconductor process and an optical fiber (4) provided on a radiation side of the light

source (3) is incorporated in the scanning optical system main body (See Generally Fig. 1 and [0042]-[0044]).

Regarding claim 2, Engelhardt discloses the laser scanning microscope wherein a detection section which detects the fluorescence or the reflected light is contained in the scanning optical system main body ([0034]).

Regarding claim 3, Engelhardt discloses the laser scanning microscope can comprise a plurality of the light sources, wherein one of the optical fibers is provided on the radiation side of a plurality of the light sources ([0002] and [0042]).

Regarding claim 4, Engelhardt discloses the laser scanning microscope can comprise a plurality of the light sources, wherein one of the optical fibers is provided on the radiation side of a plurality of the light sources ([0002] and [0042]).

Regarding claim 7, Engelhardt discloses the laser scanning microscope wherein the light source is a semiconductor laser diode ([0048]).

Regarding claim 8, Engelhardt discloses the laser scanning microscope wherein the light source is a semiconductor laser diode ([0048]).

Regarding claim 9, Engelhardt discloses the laser scanning microscope wherein the optical fiber is a single mode (See Generally Fig. 1).

Regarding claim 10, Engelhardt discloses the laser scanning microscope wherein the optical fiber is a single mode (See Generally Fig. 1).

Regarding claim 13, Engelhardt discloses a method of connecting a semiconductor light source to a scanning microscope, in a laser scanning microscope which scans a laser beam on a sample by a scanning optical system in a scanning

optical system main body to detect a fluorescence or reflected light from the sample, the method comprising using a light source manufactured by a semiconductor process, and leading the laser beam from the light source to the scanning optical system through an optical fiber (See Generally Fig. 1 and [0042]-[0044]).

Regarding claim 14, Engelhardt discloses a method of connecting a semiconductor light source to a scanning microscope, wherein the scanning optical system and the light source are accommodated in on housing (See Generally Fig. 1).

Regarding claim 15, Engelhardt discloses a semiconductor laser light source unit comprising: a semiconductor laser; a beam shaping section which condenses a laser beam emitted from the semiconductor laser and shapes a beam form; an optical fiber which transmits the laser beam; a fiber incident optical system which focuses the laser beam outgoing from the beam shaping section on an incident end surface of the optical fiber; and a fiber radiation optical system which collimates the laser beam outgoing from the optical fiber (See Generally Fig. 1, [0041]-[0049]).

Regarding claim 16, Engelhardt discloses a semiconductor laser light source unit wherein the beam shaping section is integrally provided to the fiber incident optical system ([0043]).

Regarding claim 17, Engelhardt discloses a scanning unit for a laser scanning microscope comprising: a semiconductor laser light source unit; and a scanning optical system used to scan a laser beam emitted from the semiconductor laser light source unit on a sample, the semiconductor laser light source unit and the scanning optical system being accommodated in one housing (See Generally Fig. 3 and [0056]).

Regarding claim 18, Engelhardt discloses the scanning unit for a laser scanning microscope wherein a detection section which detects the light emitted from the sample is further accommodated in the housing (See Generally Fig. 3 and [0056]).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Engelhardt et al (US 2002/0030884 A1)* as applied to claim 1 above, and further in view of *Mandella et al (US 6,423,956 B1)*.

Regarding claim 5, Engelhardt discloses the laser scanning microscope can comprise a plurality of the light sources. Engelhardt does not disclose of a plurality of optical fibers. Mandella discloses a laser scanning microscope comprising plurality of optical fibers wherein the optical fibers are respectively provided on the radiation side of a plurality of the light sources (col. 7, lines 59-67 and col. 8, lines 1-15). Mandella teaches the optical fibers can be single-mode fibers, multi-mode fibers, birefrigent fibers, polarization maintaining fibers and the like. Therefore, it would have been obvious to a person of ordinary skill in the art to modify the apparatus suggested by Engelhardt so as to include a plurality of optical fibers as disclosed supra by Mandella to allow for a more versatile apparatus.

Regarding claim 11, Engelhardt discloses the laser scanning microscope comprising of optical fibers. Engelhardt does not specifically disclose of the optical fibers being of a polarization plane preservation type. Mandella discloses a laser scanning microscope wherein the optical fiber is of a polarization plane preservation type (col. 21, lines 44-66). Mandella teaches by detecting induced changes in the polarization state of light reflected from a skin sample, for example, an image representing the regions of skin where thermal injury occurs can be identified (col. 21, lines 37-40). Therefore, it would have been obvious to a person of ordinary skill in the art to modify the apparatus suggested by Engelhardt so as to include optical fiber of a polarization plane preservation type as disclosed supra by Mandella to allow for a more versatile apparatus.

6. Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Engelhardt et al (US 2002/0030884 A1)* as applied to claim 2 above, and further in view of *Mandella et al (US 6,423,956 B1).*

Regarding claim 6, Engelhardt discloses the laser scanning microscope can comprise a plurality of the light sources. Engelhardt does not disclose of a plurality of optical fibers. Mandella discloses a laser scanning microscope comprising plurality of optical fibers wherein the optical fibers are respectively provided on the radiation side of a plurality of the light sources (col. 7, lines 59-67 and col. 8, lines 1-15). Mandella teaches the optical fibers can be single-mode fibers, multi-mode fibers, birefrigent fibers, polarization maintaining fibers and the like. Therefore, it would have been obvious to a person of ordinary skill in the art to modify the apparatus suggested by

Engelhardt so as to include a plurality of optical fibers as disclosed supra by Mandella to allow for a more versatile apparatus.

Regarding claim 12, Engelhardt discloses the laser scanning microscope comprising of optical fibers. Engelhardt does not specifically disclose of the optical fibers being of a polarization plane preservation type. Mandella discloses a laser scanning microscope wherein the optical fiber is of a polarization plane preservation type (col. 21, lines 44-66). Mandella teaches by detecting induced changes in the polarization state of light reflected from a skin sample, for example, an image representing the regions of skin where thermal injury occurs can be identified (col. 21, lines 37-40). Therefore, it would have been obvious to a person of ordinary skill in the art to modify the apparatus suggested by Engelhardt so as to include optical fiber of a polarization plane preservation type as disclosed supra by Mandella to allow for a more versatile apparatus.

7. Claims 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Engelhardt et al (US 2002/0030884 A1)* as applied to claim 15 above, and further in view of *Mandella et al (US 6,423,956 B1)*.

Regarding claim 19, Engelhardt discloses the semiconductor laser light source unit comprising a plurality of semiconductor lasers ([0002] and [0042]). Engelhardt does not specifically disclose combining the plurality of laser beams into one laser beam. Mandella discloses the semiconductor laser light source unit comprising a plurality of the semiconductor lasers, wherein the beam shaping section comprises; a beam shaping optical system which condenses each of the laser beams emitted from a

plurality of the semiconductor lasers and performs beam shaping; and a combining optical system which combines a plurality of the laser beams into one laser beam (See Generally Fig. 6B and col. 26, lines 50-64). Mandella teaches single-mode fibers offer the advantage of simplicity and automatic assurance of the mutual spatial coherence of the observation and reference beams upon detection (col. 26, lines 58-62). Therefore, it would have been obvious to a person of ordinary skill in the art to modify the apparatus suggested by Engelhardt so as to include combining a plurality of laser beams into one laser beam as disclosed supra by Mandella to allow for a more versatile apparatus.

Regarding claim 20, Engelhardt discloses of a plurality of semiconductor lasers ([0002] and [0042]). Engelhardt does not specifically disclose of a semiconductor laser including a pair of laser light sources whose polarization plane are substantially orthogonal to each other. Mandella discloses a semiconductor laser light source unit wherein a plurality of the semiconductor lasers includes a pair of laser light sources which emit laser beams which have the same wavelength and whose polarization planes are substantially orthogonal to each other, and the combining optical system includes a polarized beam splitter which combines the both laser beams which have the same wavelength and whose polarization planes are substantially orthogonal to each other and outputs a result by reflecting or transmitting the both laser beams in accordance with directions of the polarization planes of the laser beams (See Generally Figs. 3A and col. 20, lines 52-67 and col. 21, lines 1-25). Mandella teaches an angled-dual axis confocal scanning system (300) provides a high-resolution imaging device and can be readily employed in a variety of applications. Therefore, it would have been

obvious to a person of ordinary skill in the art to modify the apparatus suggested by Engelhardt so as to include combining the optical system including a polarization beam splitter as disclosed supra by Mandella to allow for a more versatile apparatus.

Regarding claim 21, Engelhardt discloses the semiconductor laser light source unit wherein a plurality of the semiconductor lasers includes laser light sources which emit laser beams having different wavelengths, and the combining optical system includes a dichroic mirror which combines the laser beams and outputs a result by reflecting or transmitting the laser beams in accordance with the wavelengths (See Generally Fig. 2, [0050]-[0055]).

Regarding claim 22, Engelhardt discloses of a plurality of semiconductor lasers ([0002] and [0042]). Engelhardt does not specifically disclose of a semiconductor laser comprising combining parallel beams outputted from the fiber radiation optical sytem of a plurality of optical fibers into one beam. Mandella discloses the semiconductor laser light source unit wherein the light source unit comprises a plurality of semiconductor lasers, a plurality of the optical fibers are provided in accordance with a plurality of the semiconductor lasers, a plurality of the beam shaping sections are provided in accordance with a plurality of the semiconductor lasers, condense and shape the laser and focus them on the incident end surfaces of the respective optical fibers, and the semiconductor laser light source unit further comprises a combining optical system which combines parallel beams outputted from the respective fiber radiation optical systems of a plurality of the optical fibers into one beam (See Generally Fig 6B and col. 26, lines 50-67 and col. 27, lines 1-37). Mandella teaches various optical fibers in such

system should be polarization maintaining fibers, capable of supporting two orthogonal polarizations (col. 26, lines 64-66). Therefore, it would have been obvious to a person of ordinary skill in the art to modify the apparatus suggested by Engelhardt so as to include combining the optical system combining parallel beams outputted from the fiber radiation optical system of a plurality of optical fibers into one beam as disclosed by Mandella to allow for a more versatile apparatus.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Faye Polyzos whose telephone number is 571-272-2447. The examiner can normally be reached on Monday thru Friday from 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FP

DAVID PORTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800